Appendix C

VEGETATION MANAGEMENT PRACTICES

APPENDIX C VEGETATION MANAGEMENT PRACTICES

All vegetative management practices on forested lands will be preceded by a silvicultural examination, an on-the-ground analysis of the area, and a site-specific prescription written or reviewed by a certified silviculturist. The prescription process considers direction and objectives set forth in this Forest Plan, site-specific factors, and a review of the applicable technical and scientific literature, as well as practical experience. The prescription will detail the actual vegetative manipulation to be implemented on a case-by-case basis. The standards for all silvicultural systems in the Pacific Northwest Regional Guide will also be used in determining the silvicultural system to be implemented.

The silvicultural prescription process is a concurrent activity with the interdisciplinary team process in preparing projects. Prescriptions are formulated within Forest Plan guidance to achieve specific objectives of management areas. The full range of silvicultural systems (individual tree selection to clearcut) are available for use on the Malheur National Forest The selected vegetative management practices for individual sites will comply with management requirements listed in 36 CFR 219.27(b).

Refer to Chapters II and IV of the Final Environmental Impact Statement for complete discussions of silvicultural systems and environmental effects.

Clearcutting

Clearcutting as a silvicultural system will be employed to harvest timber under this Plan. This method is selected on the basis of physical and biological site factors and existing timber types, as well as overall economics. Clearcutting will be selected only when it is determined to be the optimal silvicultural system. Appropriate numbers of wildlife trees will be retained

Clearcutting allows considerable flexibility in determining the character and composition of future timber stands The species, degree of stocking, etc., can be controlled with various silvicultural techniques. This is especially useful in situations where existing stands are occupied by less valuable and undesirable species, or the current species composition is at high risk for losses due to insects or disease.

The clearcutting method, in general, is the most economical harvest system to employ. Since all merchantable timber is removed, the volume and value per acre treated and accessed is maximized.

Clearcutting can be detrimental if applied to sites where physical conditions will change to extremes of heat and cold if the Forest cover is totally removed In these cases, regeneration efforts can be difficult and costly. However, clearcutting may be the most effective harvest method to achieve the desired multiple use objective of a stand. An example is a big-game winter range where clearcutting on appropriate sites is the most successful system for maximizing growth of suitable browse vegetation.

Following are general descriptions of sites and situations when clearcutting may be selected as the optimal harvesting method. Not all possible sites and situations are listed, however, since site-specific, on-the-ground analysis may identify situations where clearcutting may be the optimal method and where it is probable that clearcutting may not be the optimal method for all the lands that fit these broad descriptions.

1. The moisture and temperature regimes of the site, following clearing, will be favorable for regenerating the desired species. In general, north and east aspects fit this category, but conditions can vary by geographic location.

2. The existing stand is stocked with species that are not desired in the regenerated stand because of disease or insect susceptibility, or the physiological condition of the existing overstory is such that natural regeneration is unlikely to occur.

3. The change in forested appearance created by the harvest opening does not conflict with objectives for visual management.

4. Management objectives for the area can be better achieved by clearing all of the trees in one operation (e.g., increasing browse and forage for wildlife or livestock).

Clearcutting is most likely to be prescribed for habitat types in the Douglas-fir (*Pseudotsuga menziesii*) series, on the cool/moist habitat types of the grand fir (*Abies grandis*) series, and the subalpine fir (*Abies lasiocarpa*) series. It will also be the predominant silvicultural system for regenerating lodgepole pine stands.

Seed Trees

The seed tree system is normally used for the same reasons and on the same sites as clearcutting with the additional potential for achieving natural regeneration from the seed trees.

Shelterwood

The shelterwood silvicultural system will also be used to harvest timber under this Plan. In a shelterwood system, the basic objective is to have the second crop of trees started on a site before all of the standing timber is removed.

Shelterwood systems are used in situations where the physical site conditions created by clearcutting would be too harsh for tree regeneration or would not be favorable to the establishment and growth of the desired species. The residual stand provides protection from temperature extremes on the site and modifies the climatic factors in general. The shelterwood system also offers the opportunity to reduce regeneration costs if factors are suitable for establishing natural regeneration from the seed source provided by the residual stand.

Shelterwood systems can also be the most effective means of achieving multiple use objectives in some instances. One example is those cases where visual quality objectives are retention or partial retention. In many cases the larger, more commercially valuable trees are left standing after the initial harvest entry. This reduces the volume and value per acre removed in the initial harvest entry, thereby increasing the unit costs of access and harvesting in many cases.

Once regeneration is established, removal of the residual stand requires careful harvest planning and implementation to protect the new crop of trees.

Following is a list of general factors that will be considered when determining whether or not the shelterwood system will be applied to a specific site. A site-specific silvicultural prescription may consider additional factors and timber sale conditions.

1. The existing stand is stocked with species that are desired in the regenerated stand and the physiological condition of the trees is such that seed production and successful regeneration are likely to occur. The wind firmness of the stand will also be a consideration

2. The moisture regimes and temperatures on the site are such that without some shading and cover, conditions will become too harsh for tree regeneration. South and west aspects generally fit into this category, but conditions can vary by location.

3. Management objectives for the area can best be achieved by maintaining some tree cover on the site until regeneration is established.

Shelterwood harvesting is most likely to be prescribed on the warmer/drier habitat types of the grand fir series, the Douglas-fir habitat types, and ponderosa pine habitat types.

In prescribing shelterwood harvest methods, consideration will be given to future harvests required, the feasibility of removing the residual overstory from an established stand of seedlings, and the effectiveness of site preparation and slash treatment

Selection Harvests

Individual tree and group selection harvest methods may be applicable to certain combinations of timber management and other resource objectives identified by the land assignments in this Plan. The most probable situations for implementing these silvicultural systems would be in riparian areas and in areas with visual quality objectives of retention or partial retention, and in the general forest condition where ponderosa pine is to be emphasized. Selection harvest methods should be evaluated when harvesting is scheduled in areas with these resource objectives

The existing timber types, stand conditions, and site characteristics are also critical factors that will be evaluated when considering the applicability of uneven-aged systems. Stands with high percentages of low-vigor trees with little seed-producing potential and species highly susceptible to disease and insect damage are examples of situations where uneven-aged management may not meet overall objectives.

Overstory Removals

Typical management activities will consist of the complete removal of existing overstory trees and thinning of the remaining understory in a one-step operation, to meet full stocking level control objectives This method is selected on the basis of physical and biological site factors, existing timber types as well as overall economics.

Following is a list of general factors that will be considered when determining whether or not the overstory removal cutting harvest method will be applied to a specific site. A site-specific silvicultural prescription may consider additional factors and timber sale conditions

1. The existing stand has a two storied appearance; the understory is stocked with species that are desired and the physiological condition of the trees is such that they will respond favorably to release.

2. Management objectives for this area can be better achieved by removing the existing overstory trees and managing the understory crop trees to maturity.

3. Overstory removals will be considered for use on ponderosa pine habitat types, Douglas-fir habitat types, white fir habitat types, and lodgepole pine habitat types.

Intermediate Harvests

Intermediate harvests such as commercial thinnings will generally be prescribed only in stands that have not reached the culmination of mean annual increment. *Salvage or sanitation harvests may be considered as intermediate treatments in* stands that have already culminated in growth, but cannot be harvested and regenerated because of multiple use constraints on scheduling such as maintaining wildlife cover. This treatment may be considered in lodgepole pine stands that are considered high risk for mountain pine beetle infestation.

Timber Stand Improvement

Precommercial thinning, cleaning, and weeding treatments will be used on sapling-sized stands where stocking exceeds the level necessary to meet the future stand objectives. Thinnings will be designed to promote within-stand diversity while maintaining stand growth and yield projections at levels prescribed in the management prescriptions.

Reforestation

All cutover sites will be planned for regeneration. Hand planting will generally be prescribed for areas that have been clearcut. Hand planting may also be prescribed in shelterwood units when natural regeneration is unlikely, or expected to be inadequate to meet required stocking levels, a species change is needed or to achieve genetic improvement. Natural regeneration may be prescribed, primarily in shelterwood units where regeneration is likely to occur within five years.

For more specific criteria on silvicultural system selection, refer to the Pacific Northwest Regional Guide, Management Standards and Guidelines, pages 3-1 to 3-9.

TABLE C-1
Vegetation Management Practices (Average Annual in Decade 1)

Practice	Acres
Regeneration harvest	
Clearcut	3,330
Shelterwood and seed tree	
Preparatory cut	1,583
Seed cut	2,989
Removal cut	512
Selection	6,424
Intermediate harvest	
Overstory removal of existing stands	6,301
Commercial thinning	6,778
Salvage/sanitation1/	3,956
Timber stand improvement	10,842
Reforestation2/	12,672

1/Estimate
2/7,211 acres natural regeneration and 5,461 acres planted

Prescribed Fire

Prescribed fire is a useful tool for managing vegetation, particularly when maintaining or improving wildlife habitat and rangeland Prescribed fire is used when the palatability of forage decreases and the removal of old, dead material is necessary to increase utilization by grazing animals. It will also be used to release plant nutrients in the soil and litter in order to promote greater leader growth and sprouting When undesireable plant species are taking over a site, the manager will utilize fire to increase the coverage of desireable species. Areas where livestock or wildlife movement is restricted or nonexistent, fire will be used to open them up allowing greater movement, resulting in better utilization. This technique is especially important for wildlife when migration corridors are no longer used because they are closed off by dense vegetation. Prescribed fire is generally used to increase the diversity of wildlife species as well as animal population densities in all vegetative types In addition to being ecologically desireable, prescribed fire is also a cost-efficient management tool.

Herbicide Use

The use of pesticides and herbicides in the management of vegetation will be considered in the analysis of alternatives which evaluate cultural, mechanical, manual, prescribed fire, biological, chemical, and regulatory methods. The analysis will evaluate the effectiveness, specificity, environmental impacts, and benefit cost of the alternative in meeting management goals.

Possible Modifications to Timber Harvest Scheduling

In response to Regional and Washington Office direction, an analysis was completed which examined opportunities to increase the allowable sale quantity if certain economic conditions changed (e.g., rising demand or prices) Opportunities to increase the allowable sale quantity do exist in two distinct categories: 1) harvesting timber from tentatively suitable acres that were not selected as cost-efficient in FORPLAN modeling; and 2) increasing timber management intensities beyond the levels which FORPLAN chose as most cost-efficient;

The first opportunity to increase allowable sale quantity involves the acres of tentatively suitable land which was not selected as cost-efficient under this Forest Plan. If these acres (29,090 total acres) are forced into timber production, allowable sale quantity would be increased by 1.2 million cubic feet per year (7 MMBF). Currently a portion of these lands are decadent, low value, mixed conifer species which have the potential of being productive in the next stand rotation. Under this Plan, these acres may be brought into timber management (based on site-specific analysis), as market condition change, new technology is developed or the budget allows. There would be some change in environmental effects if these production increases were made; however, these changes are not expected to be significant. Clearcut harvest as well as selection harvest would increase under this scenario, ponderosa pine volumes available for harvest in future decades would be less and long-term sustained yield would be reduced from 40.7 MMCF to 39.5 MMCF.

The second opportunity to increase allowable sale quantity is to intensify timber management activities above the level identified in this Forest Plan. Application of intensive timber management practices on these acres would produce a first decade allowable sale quantity of 35.6 million cubic feet per year (205 MMBF) and a long-term sustained yield capacity of 37.8 million cubic feet per year. The harvest levels are generated from acres in General Forest and several specific management areas, i.e., visual corridors, elk winter range, riparian areas, wildlife emphasis with scheduled timber harvest. Specific timber prescriptions were applied to these acres to produce the first decade allowable sale quantity while meeting nondeclining flow and ending inventory requirements.

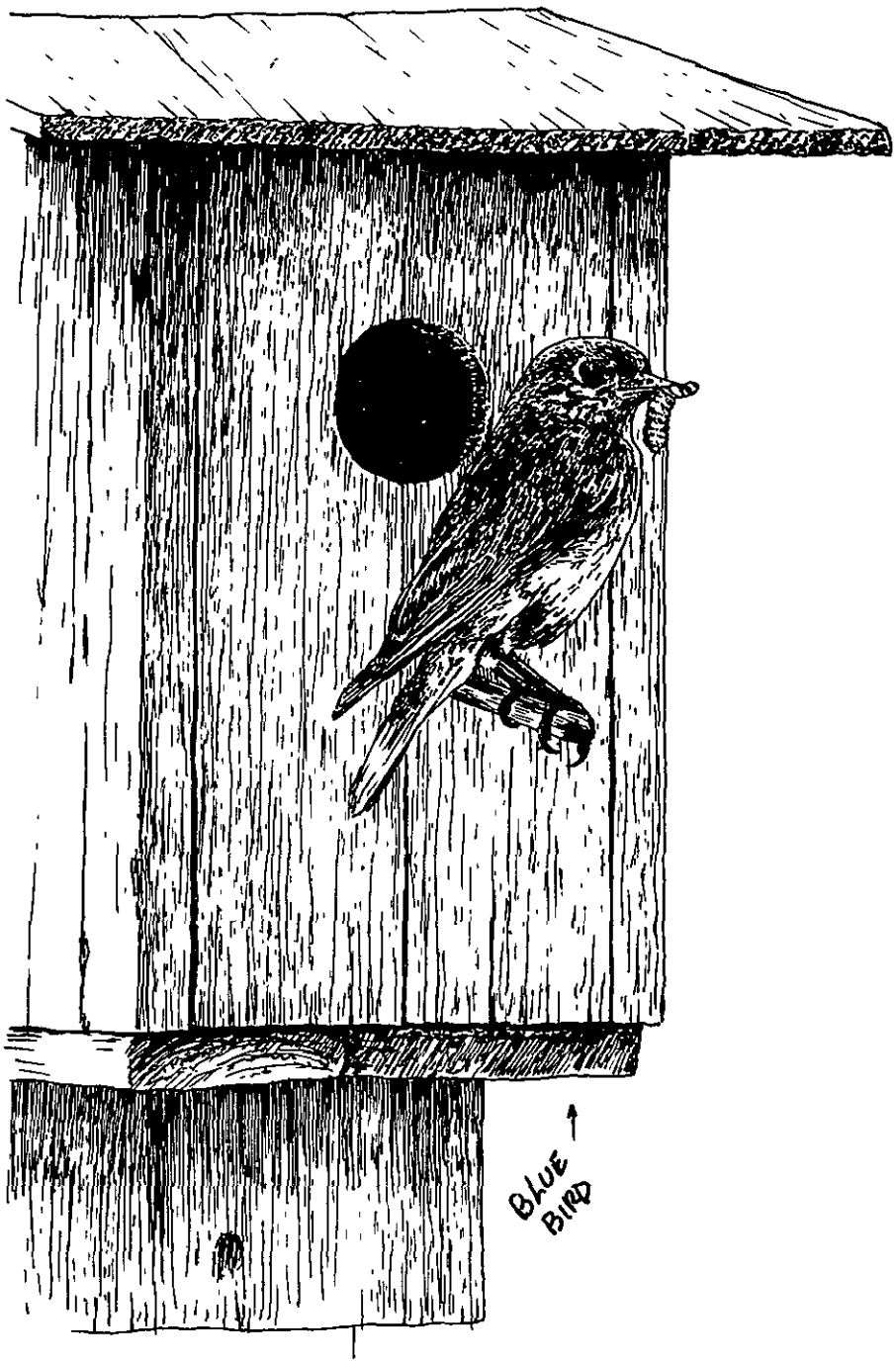
In Decades 1 and 2, harvest methods primarily include overstory removals followed by management of the remaining understory. To increase the allowable sale quantity by intensifying timber management, more reliance is placed on regeneration harvest methods; as well as commercial thinnings. If timber management intensities are increased, there would be some changes in environmental effects, primarily on wildlife habitat and water quality.

Production is not limited by cost considerations and all suitable forested acres were sent to timber management prescriptions. Increasing the management intensity (i.e., a FORPLAN objective function of maximum timber production) on all suitable acres (835,216 acres) results in an increase in first decade allowable sale quantity of 0.8 million cubic feet per year (5 MMBF).

TABLE C-2
Evaluation of Land for Timber Production

Tentatively suitable for timber production under different objective functions		Average Annual ASQ		LTSYC1/
Category	Acres	MMBF	MMCF	MMCF
1. Suitable - land & intensities cost efficient to meet Plan objectives and design for Timber Management (max PNV objective function)2/	835,970	200	34.8	40.7
2. Maximum Suitable Land and intensities selected under max. Timber Management Objective (max Timber objective function)3/	865,060	207	36 0	39.5
3. Economically Inefficient Difference between 1 & 2 = land and intensities not cost efficient to meet Plan objectives, direct costs exceed direct benefits	29,090	7	1.2	-1.20
4. Suitable (constrained) Max Timber objective function & cost inefficient constrained to "no harvest"4/	835,216	205	35.6	37.8
5. Economically Inefficient Difference between 2 & 4 = intensities not cost efficient	29,844	2	0.4	1.70
6. Unsuitable - designated for non-timber objectives, regardless of cost efficiency.	175,000			

1/Long-Term Sustained Yield Capacity
2/The acres and volumes shown are those from this Forest Plan (or Alternative I in FEIS)
2/Results of this FORPLAN run show the acres and volume that would be available if cost efficiency were not a criterion, and less than cost efficient acres and intensities were included
4/Results of this FORPLAN run show the acres and volume that would be available for timber harvest if cost efficiency were a criterion for acres, but not management intensity.


BLUE
BIRD